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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,866	11/26/2003	Graham Strachan	3901.US.P	6091

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EXAMINER
SONI, KETAN S

ART UNIT	PAPER NUMBER
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/721,866	STRACHAN ET AL.
	Examiner	Art Unit	
	Ketan Soni	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>11/26/2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-5</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>11/26/2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/7/2004</u>.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements submitted on Apr 07, 2004 has been

considered by the Examiner and made of record in the application file.

Specification Objections

The Specifications of the disclosure is objected to because the term "ARP" on

page: 7, line: 28 is not spelled out. For the prosecution of this application,

examiner has considered this term as address resolution protocol.

Examiner has prosecuted this application with the assumption of the

Specifications as mentioned above.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

Claim 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Claim 4 recites the limitation " the same sub-net ", "the edge switch", "the edge

switch", "the edge switch", and "the edge switch" in line: 7, 8, 10, 10, and 19

respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation " the same subnet", "the network switch", and "the

network switch" in line: 31, 31, and 2 respectively. There is insufficient

antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35
U.S.C. 102 that form the basis for the rejections under this section made
in this Office Action:

(e) the invention was described in (1) an application for patent, published under section
122(b), by another filed in the United States before the invention by the applicant for patent or
(2) a patent granted on an application for patent by another filed in the United States before
the invention by the applicant for patent, except that an international application filed under
the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an
application filed in the United States only if the international application designated the United
States and was published under Article 21(2) of such treaty in the English language.

Claims 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by

Gallo et al. (US Patent # 6907469 B1).

Consider **claim: 4**, Gallo et al. discloses <u>a network switch having ports for the</u>

<u>reception and forwarding of Ethernet packet</u>s (A network switch may connect

multiple virtual LANs (VLANs) and process frames for transfer within a VLAN or

between VLANs, column: 1, lines: 35-37), w<u>hich include media access control</u>

<u>address</u> (The logical router comprises a routing table 103 and the logical bridge

comprises a MAC address database 105 correlating MAC addresses with

physical ports, column: 1, Lines: 48-50) d<u>ata and network address data and</u>

<u>organised: said edge switch is organized:</u>

<u>(a) to perform a media access control address look-up in respect of a first packet</u>

<u>received by the switc</u>h (L2 processing typically comprises a look-up for the

destination address (DA) in the frame in the MAC address database 210, to

determine whether to filter, flood, or forward the frame, column: 3, lines: 10-12);

<u>(b) to bridge the packet if a source and a destination of the packet are on the</u>

<u>same subnet and local to the edge switc</u>h (Network data frames such as frame

202 enter the switch (frame or packet to be sent on L-2 or L-3) from a physical

medium through a plurality of ports 212 in the NPs, column: 3, lines: 8-10; MAC

address learning, as noted above, refers to a known process for facilitating frame

forwarding (L-2 sub-net), wherein the source MAC address in a received frame is recorded in a MAC address database such as 210 and 214, along with its port of origin. This allows future frames destined for the source address (SA) to be forwarded only to the port on which that address is located, column: 3,lines: 17-23; Next, in most switches, L2 processing of the frame is performed by a logical bridge such as 210. L2 processing typically comprises a look-up for the destination address (DA) in the frame in the MAC address database 210, to determine whether to filter, or forward the frame, column: 3,lines: 11-14);

(c) to perform a network destination address look-up in respect of a second packet which is received by the edge switch from a source local to the edge switch and on a first sub-net and has a destination on a second sub-net (Network data frames such as frame 202 enter the switch (frame or packet to be sent on L-2 (1st subnet) or L-3 (2nd subset)) from a physical medium through a plurality of ports 212 in the NPs, column: 3, lines: 8-10; If the frame needs L3 (2nd subset) processing it is sent to the logical router 208, column: 3, Lines: 30-31; (The look-up on the (destination address) DA determined where the frame needs L3 processing or not by the logical router 208, column: 3, Lines: 25-27); A status bit the MAC address database in the entry will indicate that if the frame is destined for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30);

(d) to forward said second packet directly towards its destination in response to network address data in said second packet when the destination thereof is a

local destination; (L2 processing typically comprises a look-up for the destination

address (DA) in the frame in the MAC address database 210, to determine

whether to filter, flood, or forward the frame, column: 3, Lines: 11-14); and

(e) to forward said second packet from the edge switch by a default route, in

response to media access control address data in said second packet, if the

destination thereof is not local to the edge switch, said edge switch having look-

up tables of media access control addresses and network addresses for local

sources and destinations on both the first and second sub-nets. (Network data

frames such as frame 202 enter the switch (frame or packet to be sent on L-2 (1st

subnet) or L-3 (2nd subset) from a physical medium through a plurality of ports

212 in the NPs, column: 3, lines: 8-10; The look-up on the DA in the frame will

also determine whether the frame needs L3 processing by the logical router

(default route) 208, column: 3, lines: 25-26; The logical bridge in the NP performs

L2 processing of the frame, including MAC address learning. As shown in blocks

308-311, to do the learning, the SA in the frame is looked up in the local MAC

address table. If it is already present, the frame is sent to its destination, the CP.

If not, the SA and its port of origin is added to the MAC address database, and

the frame is sent to the CP, column: 4, lines: 11-15; If the frame needs L3

processing it is sent to the logical router 208, column: 3, Lines: 30-31; (The look-

up on the (destination address) DA determined where the frame needs L3

processing or not by the logical router 208, column: 3, Lines: 25-27); A status bit

the MAC address database in the entry will indicate that if the frame is destined

for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30);

Consider **claim: 5**, a combination of a core router and an edge switch (The

logical router does L3 processing, performing a look-up in the routing tables to

determine whether the frame needs to go to the CP, as shown in blocks 304 and

305. If not, the frame is sent to the target NP/port (block 306), column: 4, lines:

3-6; In most switches, L2 processing of the frame is performed by a logical bridge

such as 210, column: 3, lines: 10-12; Network data frames such as frame 202

enter the switch (frame or packet to be sent on L-2 or L-3 if it is an edge device)

from a physical medium through a plurality of ports 212 in the NPs, column: 3,

lines: 8-10) for the reception and forwarding of Ethernet packets (Forwarding: L2

processing by the logical bridge 105 uses the logical router interface and the

destination MAC address to look up the MAC address and port corresponding to

the L3 destination address in the MAC address table 105, so that the frame can

be forwarded to the appropriate target network device, column: 2, lines: 3-7),

wherein said edge switch is organised: (a) to

perform a media access control address look-up in respect of a first packet

received by the switch (L2 processing typically comprises a look-up for the

destination address (DA) in the frame in the MAC address database 210, to

determine whether to filter, flood, or forward the frame, column: 3, lines: 10-12);

(b) to bridge said first packet when the source and a

destination of the packet are on the same subnet and local to the network

switch(MAC address learning, as noted above, refers to a known process for

facilitating frame forwarding (L-2 sub-net), wherein the source MAC address in a

received frame is recorded in a MAC address database such as 210 and 214,

along with its port of origin. This allows future frames destined for the source

address (SA) to be forwarded only to the port on which that address is located,

column: 3,lines: 17-23; Next, in most switches, L2 processing of the frame is

performed by a logical bridge such as 210. L2 processing typically comprises a

look-up for the destination address (DA) in the frame in the MAC address

database 210, to determine whether to filter, or forward the frame, column:

3,lines: 11-14);

(c) to perform a network destination address look-up in respect of a

second packet which is received by the network switch from a source local to

the edge switch and on a first subnet and has a destination on a second sub-net

(Network data frames such as frame 202 enter the switch (frame or packet to be

sent on L-2 (1st subnet) or L-3 (2nd subset)) from a physical medium through a

plurality of ports 212 in the NPs, column: 3, lines: 8-10; If the frame needs L3

processing it is sent to the logical router 208, column: 3, Lines: 30-31; (The look-

up on the (destination address) DA determined where the frame needs L3

processing or not by the logical router 208, column: 3, Lines:.25-27); A status bit

the MAC address database in the entry will indicate that if the frame is destined

for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30;);

(d) to forward said second packet directly towards its destination in response to

network address data in said second packet when the destination thereof is a

local destination (L2 processing typically comprises a look-up for the destination

address (DA) in the frame in the MAC address database 210, to determine

whether to filter, flood, or forward the frame, column: 3, Lines: 11-14); and

(e) to forward said second packet to said core router from the network switch, in

response to media access control address data in said second packet, if the

destination thereof is not local to the edge switch, said network switch having

look-up tables of media access control addresses and network addresses for

local sources and destinations on both the first and second sub-nets (Network

data frames such as frame 202 enter the switch (frame or packet to be sent on L-

2 (1st subnet) or L-3 (2nd subset)) from a physical medium through a plurality of

ports 212 in the NPs, column: 3, lines: 8-10; The logical bridge in the NP

performs L2 processing of the frame, including MAC address learning. As shown

in blocks 308-311, to do the learning, the SA in the frame is looked up in the local

MAC address table. If it is already present, the frame is sent to its destination,

the CP. If not, the SA and its port of origin is added to the MAC address

database, and the frame is sent to the CP, column: 4, lines: 11-15; If the frame

needs L3 processing it is sent to the logical router 208, column: 3, Lines: 30-31;

(The look-up on the (destination address) DA determined where the frame needs

L3 processing or not by the logical router208, column: 3, Lines: 25-27); A status

bit the MAC address database in the entry will indicate that if the frame is

destined for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30);

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Furuichi (US6363072 B1) in view of **Gallo et al. (US 6907469 B1).**

Consider **claim: 1**, Furuichi discloses <u>a method of operating a network switch</u>

<u>which is an edge switch in an Ethernet communication network having a</u>

<u>multiplicity of sub-net</u>s (a communication control system including a route server

and an ATM switch provided on an ATM network, and edge switches for

connecting the ATM network and other IP sub-networks to control a connection

between an arbitrary one of the edge switches and the ATM switch, Column: 4,

lines: 25-29), is arranged to receive and forward packets (Communications: the

route server and the edge switch send and receive information as required any

time after the device is started, column: 5, Lines: 35-36). But Furuichi is generally

silent about including MAC -<u>media access control address data and network</u>

<u>address data, and is in communication with a core router, comprising: performing</u>

<u>a look-up in respect of a packet which is received by the edge switch from a</u>

<u>source local to the edge switch and on a first sub-net and has a destination on a</u>

<u>second sub-net; forwarding the packet directly towards its destination in</u>

<u>response to the network address data in the packet, without the packet traversing</u>

<u>the core router, when the destination is a local destination; and forwarding the</u>

<u>packet from the edge switch to the core router, whenever the destination is not</u>

<u>local to the edge switch; said edge switch maintaining look-up tables of media</u>

<u>access control addresses and network addresses for local sources and</u>

<u>destinations on both the first and second sub-nets.</u>

However in the same field of endeavor, Gallo et al. discloses network switch

which includes a media access control MAC (The logical router comprises a

routing table 103 and the logical bridge comprises a MAC address database 105

correlating MAC addresses with physical ports, column: 1, Lines: 48-50) address

data and network address data, and is in communication with a core router (In

existing systems, a network switch 100 typically has the configuration shown in

FIG. 1. A control point (CP) 101 in the switch comprises a general-purpose

processor and software including a logical router 102 for L3 operations and a

logical bridge 104 for L2 operations. The logical router comprises a routing table

103 and the logical bridge comprises a MAC address database 105 correlating

MAC addresses with physical ports; column: 1, Lines: 44-50), comprising:

performing a look-up in respect of a packet which is received by the edge switch

from a source local to the edge switch and on a first sub-net and has a

destination on a second sub-net (The look-up on the DA in the frame will also

determine whether the frame needs L3 processing by the logical router 208,

column: 3, Lines: 25-27);

forwarding the packet directly towards its destination in response to the network

address data in the packet, without the packet traversing the core router, when

the destination is a local destination (L2 processing typically comprises a look-up

for the destination address (DA) in the frame in the MAC address database 210,

to determine whether to filter, flood, or forward the frame, column: 3, Lines: 11-

14); and

forwarding the packet from the edge switch to the core router, whenever the

destination is not local to the edge switch (If the frame needs L3 processing it is

sent to the logical router 208, column: 3, Lines: 30-31; (The look-up on the

(destination address) DA determined where the frame needs L3 processing or

not by the logical router 208, column: 3, Lines: 25-27); A status bit the MAC

address database in the entry will indicate that if the frame is destined for a

particular MAC address, it is L3 traffic, column: 3, Lines: 28-30);

said edge switch maintaining look-up tables of media access control addresses

and network addresses for local sources and destinations on both the first and

second sub-nets (A network switch connects multiple virtual LANs (VLANs) and

process frames for transfer within a VLAN or between VLANs. The L2 protocol is

used for frame transfers within a VLAN, column: 1, lines: 35-37).

There for it would have been obvious to a person with ordinary skill in the art at

the time the invention was made to incorporate a method of operating a network

switch in the communication control statement for connecting network and other

sub network as taught by Furuichi in the method of Gallo et al. for the network

switch that is capable to connect multiple virtual LANs (VLANs) and process

frames for transfer within a particular VLAN (Layer-2 bridging) or between the

VLANs using the MAC database address.

Consider **claim: 2**, Furuichi is generally silent about how the <u>network switch</u>

<u>forwards the packet to the core router in response to media access control data</u>

<u>in the packet</u>.

However in the same field of endeavor, Gallo et al. discloses, a <u>method</u>

<u>according to claim 1 wherein the</u> (L2 processing by the logical bridge 105 uses

the logical router interface and the destination MAC address to look up the MAC

address and port corresponding to the L3 destination address in the MAC

address table 105, so that the frame can be forwarded to the appropriate target

network device. Also, MAC address "learning" is performed by the logical bridge

in the CP, which adds MAC addresses and ports to the MAC database to

facilitate frame forwarding, column: 2, lines: 3-7).

Consider **claim: 3**, Furuichi is generally silent about how the <u>network switch</u>

<u>provides a default route to the core router for network destination addresses</u>

<u>which are not local to the network switch</u>.

However in the same field of endeavor, Gallo et al. discloses, a <u>method</u>

<u>according to claim 1 wherein the network switch provides a default route to the</u>

<u>core router for network destination addresses which are not local to the network</u>

<u>switch</u> (When a frame is received, a DA look-up is performed by the logical

bridge in the receiving NP, as shown in blocks 300 and 301. If the look-up

determines that the frame is an L3 frame, the frame is sent to the logical router

as shown in blocks 302 and 304, column: 3, lines: 63-67).

Conclusion

The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure.

☐   Yim (U.S. PG PUB # US 2002/0052972 A1) discloses: Communication

method for VLAN in internet protocol subnet involves transmitting unicast packet

from source host to destination host using MAC address included in response

packet received from the destination host.

☐   Shah (U.S. PG PUB # US 2004/0088389 A1) discloses: Methods and

apparatus for automated edge device

☐   Creedon et al. (U.S. Patent # US 5987507) discloses: Multi-port

communication network device with threshold control of port packet counters.

◻ Wilson et al. (U.S. Patent # US 6470025 B1) discloses: System for providing fair access for VLANs to a shared transmission medium.

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ketan Soni whose telephone number is (571) 270-1782. The Examiner can normally be reached on Monday-Thursday from 6:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Rafael Pérez-Gutiérrez can be reached on 571-272-7915. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR

only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

or 703-305-3028. If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist/customer service whose

telephone number is (571) 272-2600.

Ketan Soni

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March 6, 2007.